

CLAIMS

1. Method for generating persistent annotations of multimedia content, comprising one or more repetitions of the following steps:

actively selecting examples of multimedia content to be annotated by a user;

5 accepting input annotations from said user for said selected examples;

propagating said input annotations to other instances of multimedia content; and

storing said input annotations and said propagated annotations.

2. The method of claim 1, wherein the step of actively selecting is performed using a selection technique selected from the group consisting of: deterministic and probabilistic.

10 3. The method of claim 2, wherein the step of actively selecting, which is performed deterministically or probabilistically, is based on explicit models and feature proximity/similarity measures, and returns one or more examples of multimedia content to be annotated.

15 4. The method of claim 2, wherein the step of actively selecting, which is performed deterministically or probabilistically, is based on implicit models and feature proximity/similarity measures, and returns one or more examples of multimedia content to be annotated.

5. The method of claim 1, wherein an optimization criterion for active selection includes one or more criteria selected from the group consisting of: maximizing disambiguation, information measures, and confidence.

20 6. The method of claim 1, wherein the multimedia content comprises one or more types selected from the group consisting of: images, audio, video, graphics, text, multimedia, Web pages, time series data, surveillance data, sensor data, relational data, and XML data.

7. The method of claim 1, wherein the input annotations are created by a user with reference to a vocabulary.

8. The method of claim 7, wherein the vocabulary contains one or more items selected from the group consisting of: terms, concepts, labels, and annotations.
9. The method of claim 1, wherein the process of creating input annotations by the user involves multimodal interaction with the user using graphical, textual, and/or speech interface.
- 5 10. The method of claim 1, wherein the input annotations are created by means of steps selected from the group consisting of: creating new annotations, deleting existing annotations, rejecting proposed annotations, and modifying annotations.
11. The method of claim 7, wherein the vocabulary is adaptively or dynamically organized and/or limited by the system or the user.
- 10 12. The method of claim 9, wherein the multimodal interaction involves speech recognition, gaze detection, finger pointing, expression detection, and/or effective computing methods for sensing a user's state.
13. The method of claim 1, wherein the determination of the propagation of annotations is made deterministically or probabilistically and on the use of models for each annotation or for joint
15 annotations.
14. The method of Claim 2, wherein the models are created or learned automatically or semi-automatically and/or are updated adaptively from interaction with the user.
15. The method of claim 2, wherein the models are based on nearest neighbor voting or variants, parametric or statistical models, expert systems, rule-based systems, or hybrid techniques.
- 20 16. System for generating persistent annotations of multimedia content, comprising:
means for actively selecting examples of multimedia content to be annotated by a user;
means for accepting input annotations from said user for said selected examples;

means for propagating said input annotations to other instances of multimedia content;
and
means for storing said input annotations and said propagated annotations.

17. The system of claim 16 wherein the means for actively selecting uses a selection
5 technique selected from the group consisting of: deterministic and probabilistic.

18. The system of claim 17, wherein the means for actively selecting, which uses a
deterministic or probabilistic technique, is based on explicit models and feature
proximity/similarity measures, and returns one or more examples of multimedia content to be
annotated.

10 19. The system of claim 17, wherein the means for actively selecting, which uses a
deterministic or probabilistic technique, is based on implicit models and feature
proximity/similarity measures, and returns one or more examples of multimedia content to be
annotated.

15 20. The system of claim 16, wherein an optimization criterion for active selection includes
one or more criteria selected from the group consisting of: maximizing disambiguation,
information measures, and confidence.

21. The system of claim 16, wherein the multimedia content comprises one or more types
selected from the group consisting of: images, audio, video, graphics, text, multimedia, Web
pages, time series data, surveillance data, sensor data, relational data, and XML data.

20 22. A computer program product in a computer readable medium for generating persistent
annotations of multimedia content, the computer program product comprising instructions for
performing one or more repetitions of the following steps:

actively selecting of examples of multimedia content to be annotated by a user;
accepting input annotations from said user for said selected examples;

propagating said input annotations to other instances of multimedia content; and
storing said input annotations and said propagated annotations.

2025.01.24.10.55.45